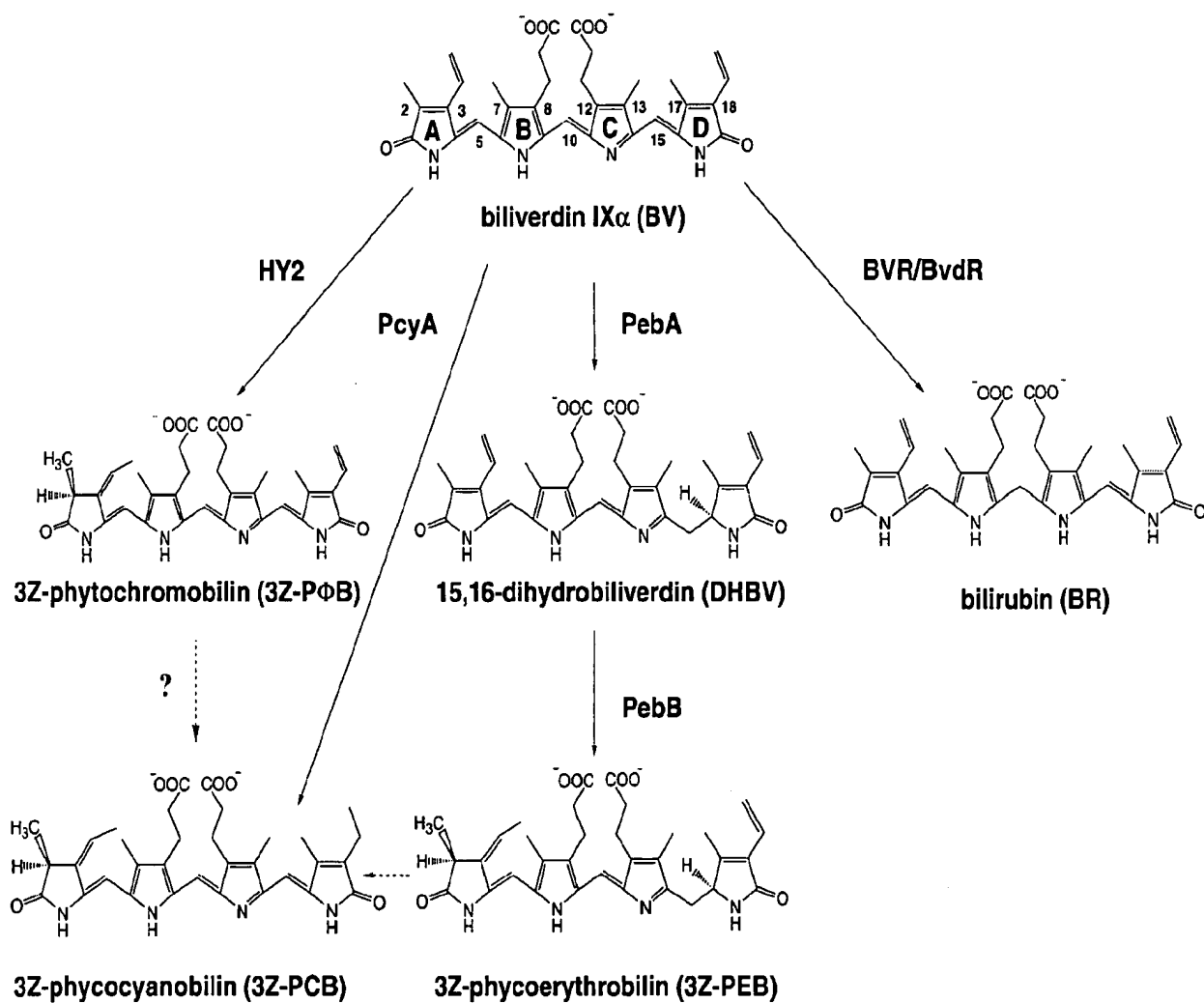
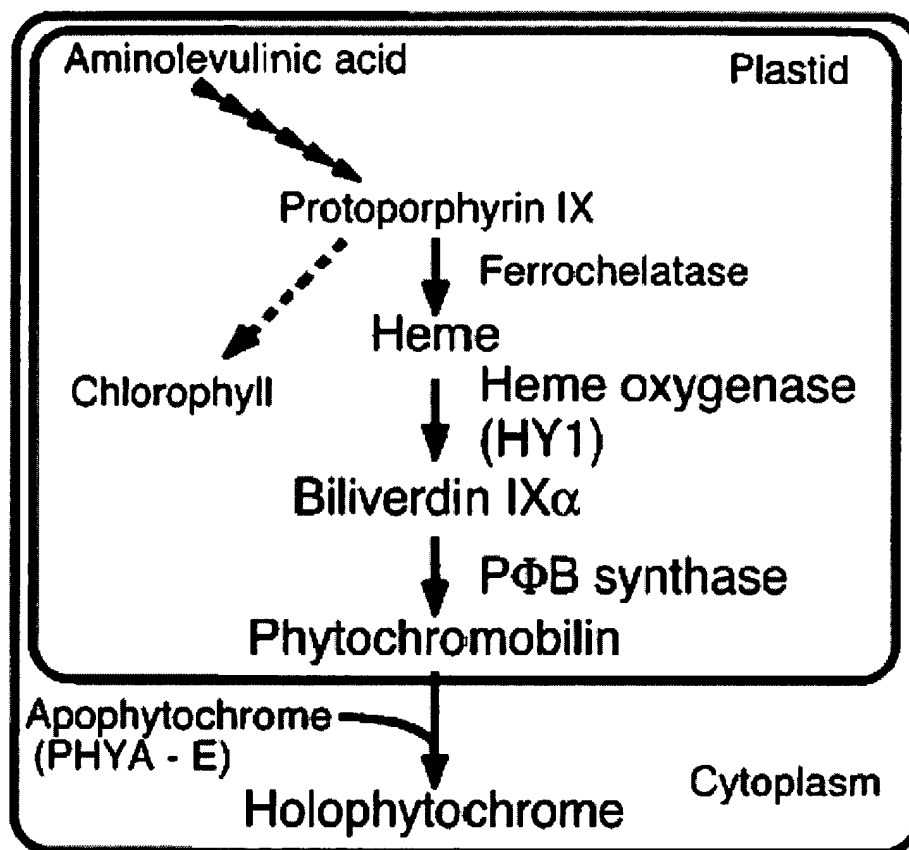


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**Fig. 1**

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**Fig. 2**



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gaattccccacgtcaacgtgactgtgcattccacgtggcggatgtgggccctatagttgg 60  
accatgactoggacggatgttgaaattcattgtcgttgccaattgcgtttgtctcactga 120  
aactgtgaaaattttatctcttttatagataaAGAATCTTGCTTTTTTCAGTTTTTCAGTA 180  
TGAAGAAGAATTGAAGAGAGTGTCCGAGGAAGGAGACCTTTGGTTTCAGTTTGTGAGTCT 240  
TGTTGTAATGGCTTTATCAATGGAGTTTGGGTTTTCAATTGGGTCATGCTTCAAGGCACC 300  
M A L S M E F G F S I G S C F K A P  
AAACCCACCTGTTCTAATCTCTGCAAGCCCTAATAAGATCAATTTCACGTTGAGAAGGAG 360  
N P P V L I S A S P N K I N F T L R R R  
AAAGAAAAGATTCTTACTTAGAGTCTCTGCTGTGTCGTATAAGGAATTTCGCAGAGTCTGC 420  
hy2-106 \*\*\*\*\*  
K K R F L L R V S A V S Y K E F A E S A  
TTTAGAAGAAACCAGGAAAAGGATCGTTCTTGAACCTTCACATCTCCAGgtatatgcaat 480  
L E E T R K R I V L E P S H L Q  
tacatttcggttagtgtagtgggaggattatatatttcctcattgtttcttgctgtgaattttg 540  
ggtaaattgatttgagttgtcattaggaaccaaaataaactttactggttatagactgc 600  
ttatataagtaaaaagttcagattttgtttttctaatcacgaaactgtttcagGAAAAGTA 660  
E K Y  
TAGTAGCATGACAGGACTAGATGGTAAGACCGAACTTCAAATGCTTGCTTTTAAATCTTC 720  
S S M T G L D G K T E L Q M L A F K S S  
AAAGATTAGACTCTTGAGGAGTATGGCAATAGAGAATGAGACAATGCAGgtttaacttca 780  
K I R L L R S M A I E N E T M Q  
gcagtacaaactgattgctttagtccttcatttccttactttcaattgattgattgtttgta 840  
hy2-105 \*\*\*\*\*  
tcttcgcttagGTCTTTGACTTTGCGGGTTTCATGGAGCCTGAGTATGATACTCCCATAT 900  
hy2-1,hy2-104 T  
V F D F A G F M E P E Y D T P I F  
TCTGTGCTAACTTTTTTCACATCTACCAACGTTAACATAGTTGTATTgtaagttatcttct 960  
C A N F F T S T N V N I V V L  
agttatgctggagttatcaggtctgtattgtccaaactgatgttcaatattttactgtat 1020

Fig. 3B

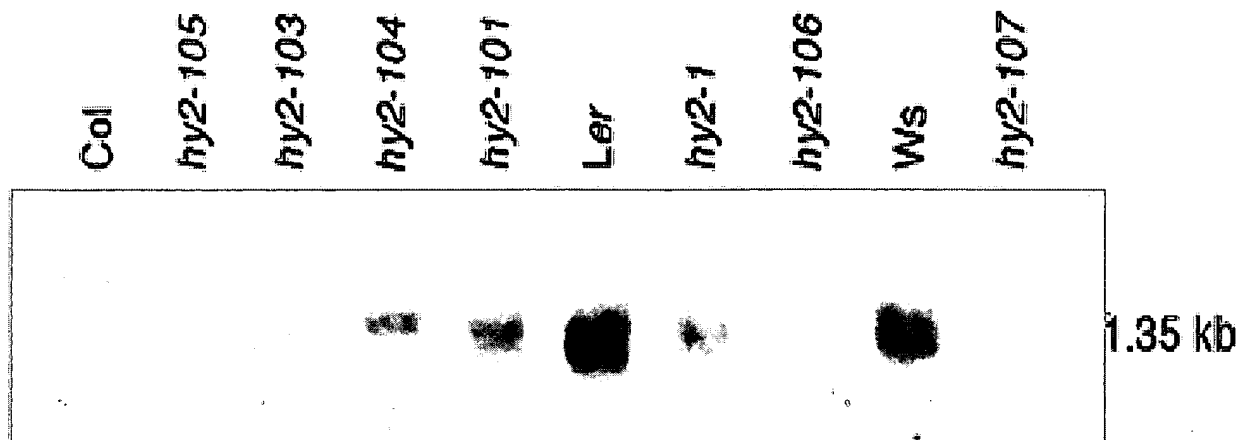


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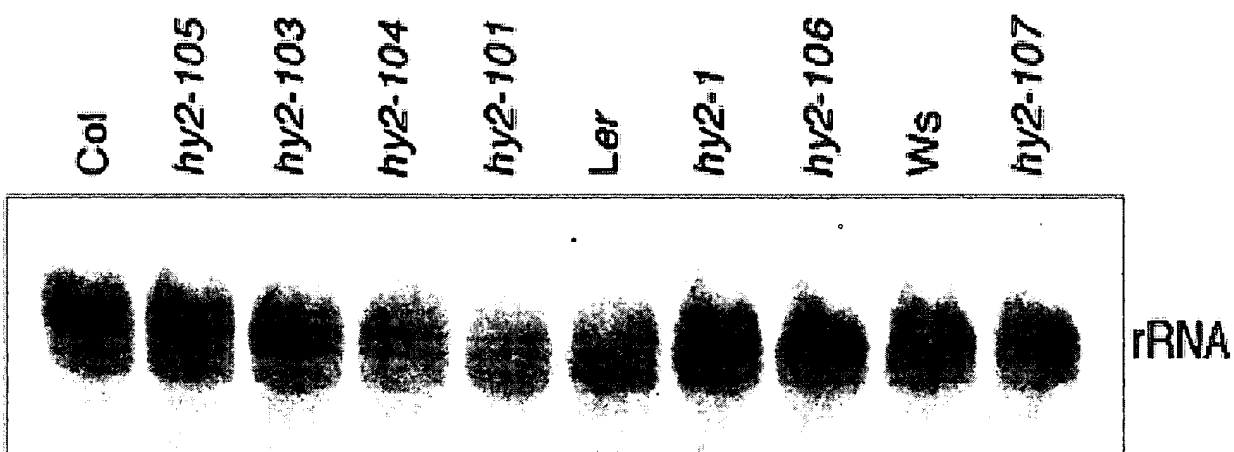
gttcttcttttagGGACCTTAATCCTTTGCATCAGTTGACTGACCAGACGGATTACCAAGA 1080  
D L N P L H Q L T D Q T D Y Q D  
CAAGTATTATAACAAGATAATGTCCATATATCACAAATATGCTGAGgtgaccacaagaat 1140  
K Y Y N K I M S I Y H K Y A E  
acaccaaattactcaattgcaagtaaaccctaattgctgaggtgtaaatgactgatcttgag 1200  
atttatttgcagACTTTCCCATGGGGAGGGAATTGACTGGTGAATCCATAAAGTTTTC 1260  
hy2-101 A  
T F P W G G K L T G E S I K F F  
TCGCCTTTGGTGATGTGGACTAGGTTTTCGTCTAGCAAAGAAAAACATAAGGCTTTGTTTC 1320  
S P L V M W T R F S S S K E K H K A L F  
TCTGCGTTTCTAGAGTACTATCAGgtatataactcagcgcccaaaagctaagggttttattg 1380  
S A F L E Y Y Q  
gaaactttgactgagaatctatcatcttcttctacagGCATGGCTTGAGATGACAATCC 1440  
hy2-107 a  
A W L E M T I Q  
AAGTGAGGGAGGAGATGGAACCATCTCATGTGAGAGCCAATTGTGAAGCACAAACACAAGT 1500  
V R E E M E P S H V R A N C E A Q H K Y  
ACCTGACATGGCGAGCACAAAAGgtgatttcatttccttttgtgtaatttgcattgtttga 1560  
hy2-103 A  
L T W R A Q K  
acagacactgtatctgtattgttacaantggatattgatttgggtgtttgcagGATCCTGGA 1620  
hy2-102 a  
D P G  
CATGGTCTTCTTAAAAGATTAGTAGGTGAAGCAAAGGCCAAAGgtataaaagatttgatcc 1680  
H G L L K R L V G E A K A K  
cattagtgtccccattattaattagcttgtgaagatgttgaaaatgatttgaacaaaatc 1740  
agGAGCTGCTAAGGGATTTCCTGTTCAATGGGGTGGATGAGTTAGGCACAAAAACATTCA 1800  
E L L R D F L F N G V D E L G T K T F I  
TTGATTACTTTCCAGAGTACCAACAGAAGATGGAAGTGTAAAGCGATAAACGAAGTATCA 1860  
D Y F P E Y Q T E D G T V S D K R S I I  
TTGGGAAGTCATATGAAACTCGTCCATGGGATTTAACAGGACAATTTATCGGCTAACAAT 1920  
G K S Y E T R P W D L T G Q F I G ==  
GATATATGTGAACAAGTCAGATTTTCAGAGTCATCAACACAAGAGGACGTGAAGTTAGGGA 1980  
AGTAGGAATAAGAAAGAGCAGCATGAGGAGTCTCTCAGGTCTATCTGCATTTCAAGATGA 2040  
TTGTTTGAGTTACCATGCATTGTAGTTTACAAAGTGTAGCTCTCAGCCCTTCATCAAAAT 2100  
GAGAATCCTCGAGTATGATATGATTTTAATGAAAATGTATTTCGTCTCTacctaatacaaca 2160

**Fig. 3B cont'd.**

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**Fig. 4A**



**Fig. 4B**



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```

*                20                *                40
HY2_ARATH : MALSMEFGFSIGSCFKAPNPVVLISASPNKINFTLRRRKK
YCP2_SYNPY : -----
YHP2_PROMA : -----
YHP3_PROMA : -----MI I KR DNS
YCP3_SYNPY : -----MTNQR FKS
SLR0116 : -----MAVTDLSLTN

```

```

*                60                *                80
RFLERVS AVSYKEFAESALEETRKRI VLEP SHLQEKYSSMTGLDGK- : 86
-----MFDSFLNELHSDITKR-----GGSPLPLPEGLEECRSSKSS- : 36
-----MNKLMLQDLHNNLKRRRI-ISHGCKPIEVENGMSERFSHKQD- : 40
LSKIDLRDWIWT PFFNDLV DKL-SVFELEPYPVSHDFLSKESITGSR : 54
TDPVNIEGWSWQPFLEDAIKRL-EGLNVEPYVPDRFLQREDQTGSK : 54
SSLMP TLNPMIQQLALAI AASW-QSLPLKPYQLPEDLGYVEGRLEGE : 56
P 6

```

```

*                100                *                120
HY2_ARATH : -----TELQMLAEKSSKIRLERSMATE N-ETMQVDFDFAGE
YCP2_SYNPY : -----SVLOS WLWDVPGERRWRVTRLDAGDSLQVENS VAY
YHP2_PROMA : -----TVIKSWLWDVPGERRWRVTRMDAGDKLOVLNS VAY
YHP3_PROMA : RNPVHVTTLTWAAKFEKIKQVRLACIKGCESLSVFNLLIH
YCP3_SYNPY : SKSIPVTTATWACKTEKERQVRAACUSAGSAASVLNFWIN
SLR0116 : -K---LV IENRCYQTPQERKMHTE LAKVGKGDE LHCVMF
P 4 E g 6

```

```

*                140                *                160                *
MEPEYDTPIFCANFFSTSTNVN--EVLVDLNEPLHQLTDQTDYQDKYNN : 165
PDYNDHPLMGVDLLWFGARQKLVAVLDFQPLVQ---DKDYLDRYFS : 115
PAYTNDKPI LGIDILWFGLKRRKLVAVLDFQPLVQ---EERYFCRYK : 119
PLNDYDLFFGADFTLPNG--HLLALDLOPAKL--DNIHTENVWP : 137
BKSTYGLPFFGGDLVTFPAG--HLLALDLOPAIKT--DEVHTTHVND : 137
PEPLYGLPLFGCDIVAGPGG-VSAATADLSPTQS---DRQLPAAYQK : 135
P Y P g 1 1D P

```

Fig. 5

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```

      180          *          200          *
HY2_ARATH : KIM-----STYHKYAEFFPWGGKLTGESIRFFSPLVMWTR-
YCP2_SYNPY : GLK-----ELNQRFPDLNGEETMRSTDPNQYFSSWLLFCR-
YHP2_PROMA : DLO-----ILKNRFVD FNSQKTMKIYDSNKYFSPVLLYN-
YHP3_PROMA : RLI-----PLHDHWQSLLPSGGGEIPKEAEFYFSPGFLWSRL
YCP3_SYNPY : RLI-----PFFERWRDQLPYGGPIPEEAQPFPSPGFLWTRL
SLR0116 : SLAELGQPEFEQQRELPPWG-----EIPSEYCLFIR-
      6                      FS      6      I

```

```

      220          *          240          *          260
---FSSSKEKHKAIFSAFLEYQAWLEMTIQVREEMEPSHVRANCEA : 244
----GGAEQADLSLPKAFSAFLKAYWDIHDNAKSIPSTIPPEEVKNL : 193
----GSFDDLQCSLAKILDEFLLHAYWVDNNNSREYIKIIPSKVEQL : 197
PLSKESDNIISEILRPAFGEYLSLYIELLHIAKPLKKER-ALKILEG : 219
PLGEEGDELIQSIVRPAFNDYLDLYLELAASAERVTDER-SEVLLOG : 219
----PSNVTEERFVQRVVDLQIHCHQSIVAEPPLSEAQ-TLEHRGG : 208
      51

```

```

          *          280          *          300
HY2_ARATH : QHKYLTWRAOKDPGHGLKRLVGEAKAKELLRDFLENGVD
YCP2_SYNPY : QDKYDIYSAERDPABGLETSHEGKDWSNRFIHEFLFPASS
YHP2_PROMA : HINYDIYSAERDPABGLEFKSYFGQTWADQFVREFLEPHSH
YHP3_PROMA : QKAYINYRSTKDPARAMLCRFYGKEWTEDYTHKVLENI--
YCP3_SYNPY : QRKYTDYRAEKDEARGMLTRFHGSEWTEAYLHTVLEDL==
SLR0116 : QIHYCQQQOKNDKTRRYLEKAEGEAWEAERYMSQVLEDVIO
      q      Y          Dp      6      G      W      6      LF

```

```

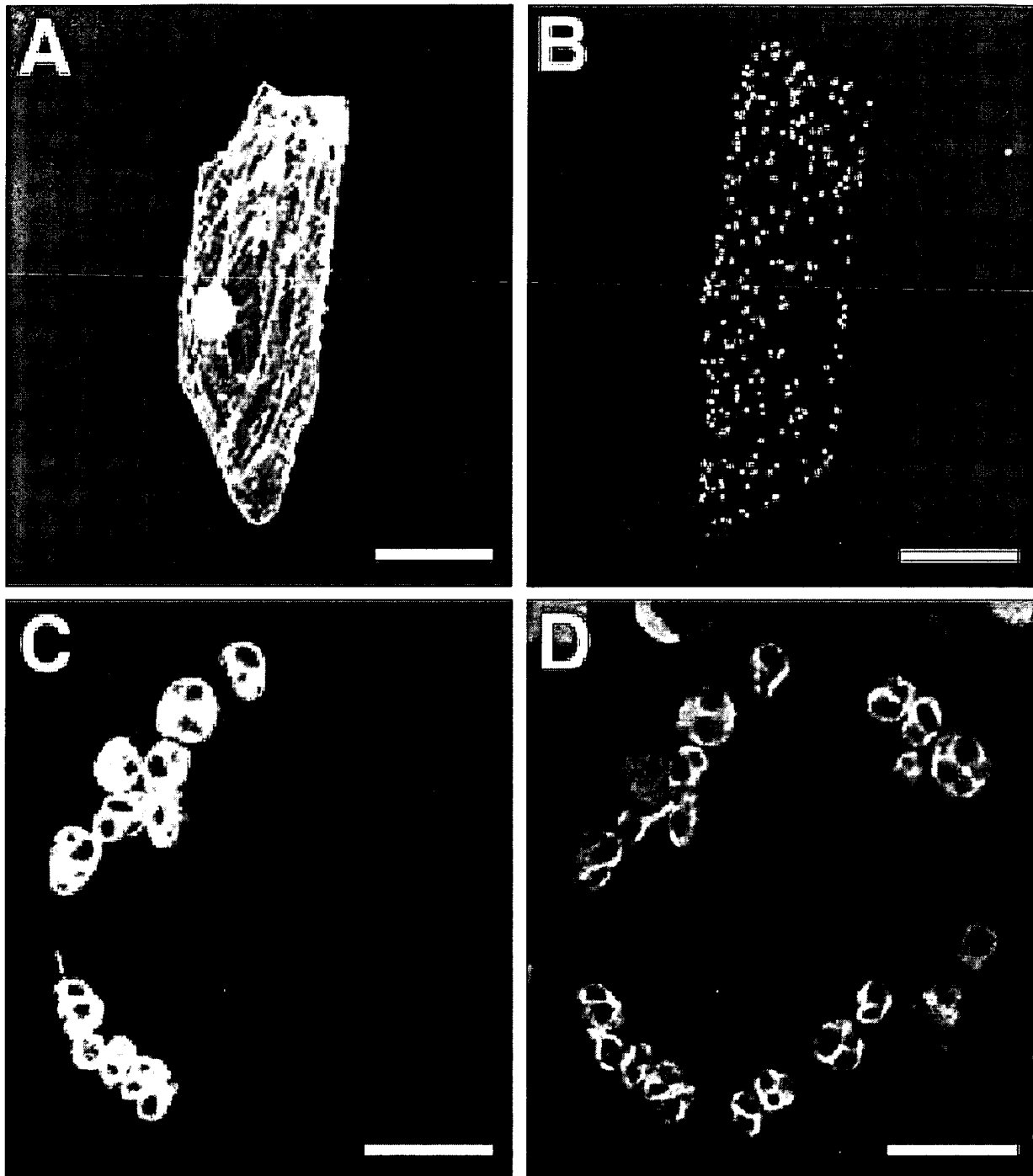
          *          320          *          340
ELGTKTFIDYFPPEYQTEDGTVSDKRSIIGKSYETRPWDLTGQFIG : 329
SHK----- : 236
LTAD----- : 241
----- : 257
----- : 257
----- : 248

```

Fig. 5 cont'd.



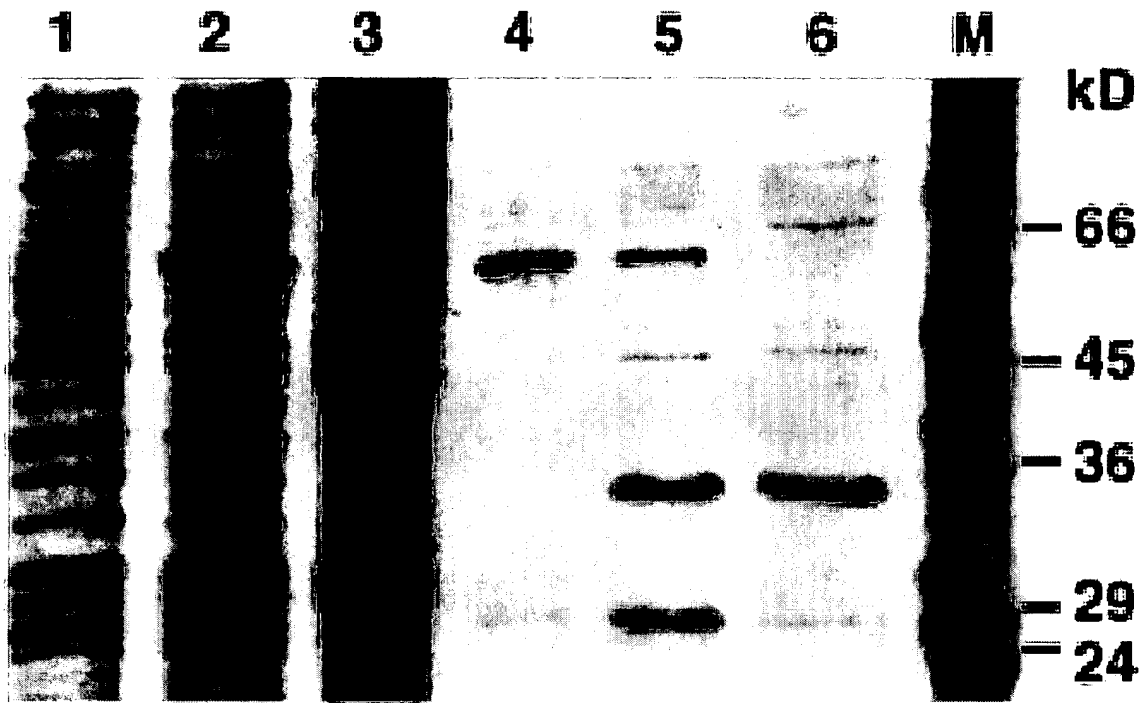
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**Fig. 6**





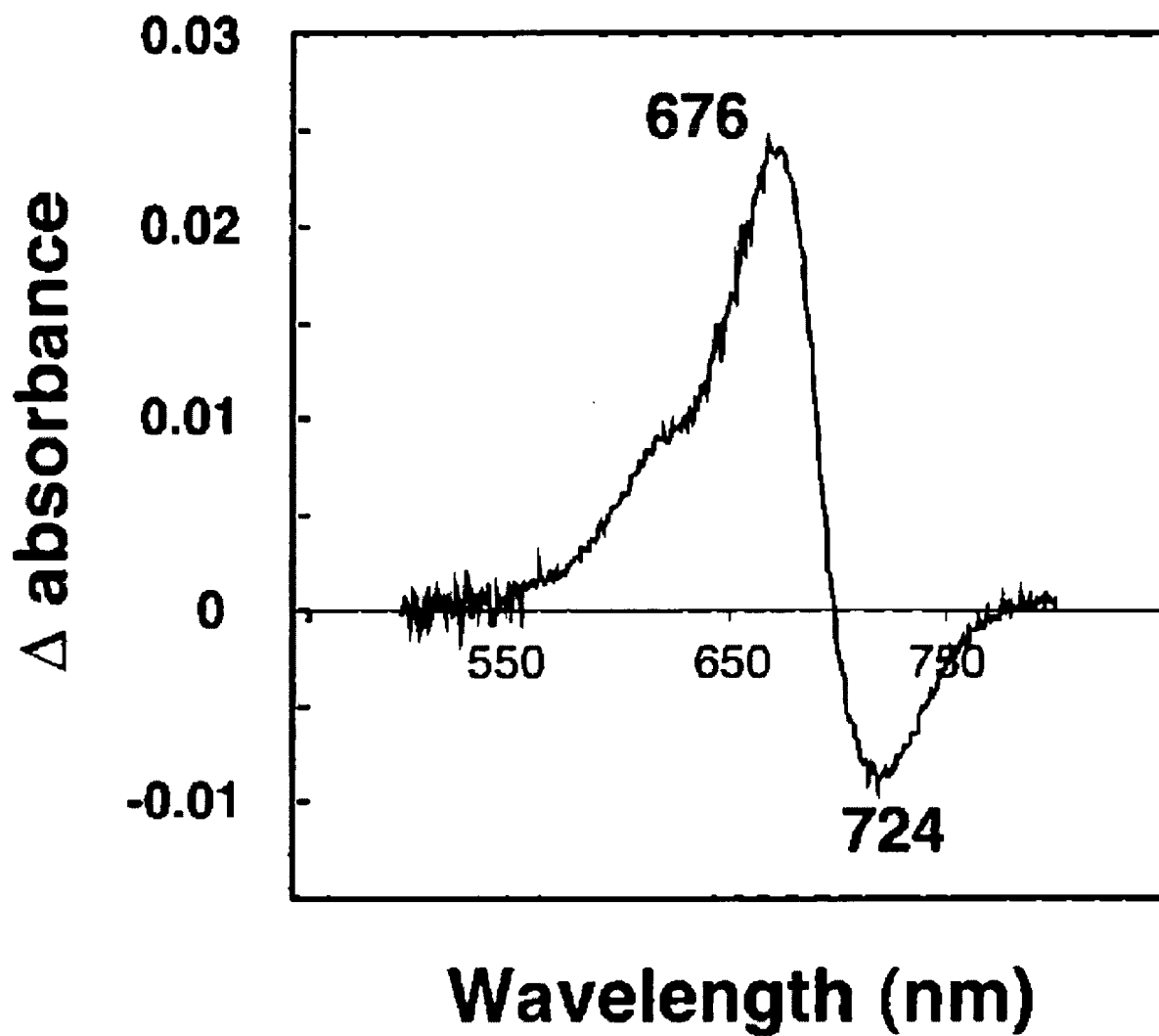
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*Fig. 7*



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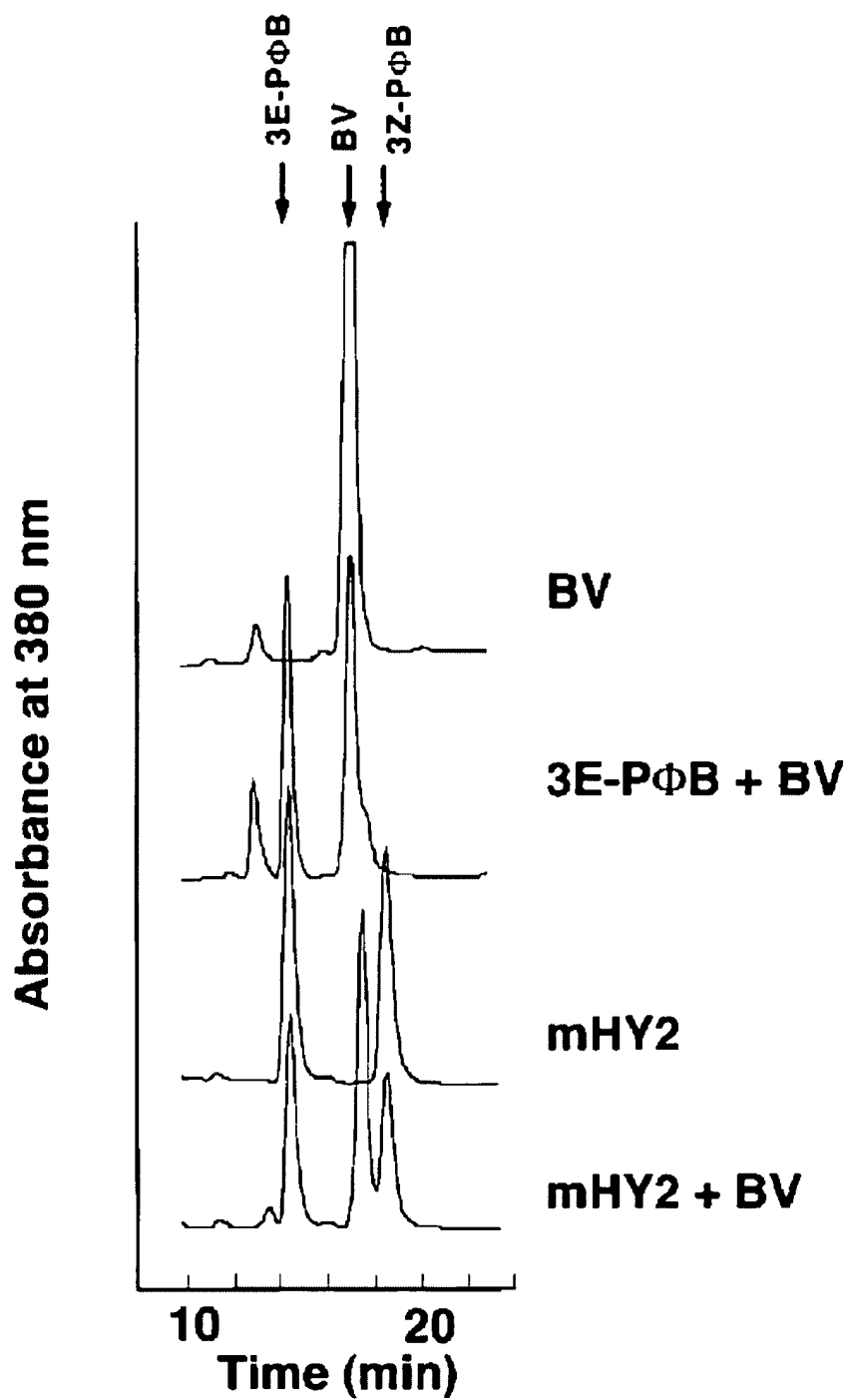


*Fig. 8*



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**Fig. 9**





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100 \* 120 \*

PcyA\_ANASP : GYVEGRLEGEK-----LT TENRCYQT PQF EKMHLELAKVG  
PcyA\_NOSFU : GYVEGRLEGEK-----LT TENRCYQT PQF EKMHLELANIE  
PcyA\_SYNY3 : GYVEGRLEGEK-----LV TENRCYQT PQF EKMHLELAKVG  
PcyA\_SYN81 : SSIEGQLEGDD-----LL ERNELLCGRGV EKMHLELARLE  
PcyA\_PROME : SNITSNEBGKE-----LY TENEFYKAKGF AKLHI EVAEFS  
PebA\_SYNPY : EECRSSKSS-----SV IQSWLWDV PGF FRRWRVTRLDAG  
PebA\_SYN81 : EHNQSQKGS-----ST IQSWLWQV PGF FRRWRVTRLDAG  
PebA\_PROMA : SERFSHKQD-----TV I KSWLWDV PGF FRRWRVTRMDAG  
PebA\_PROME : EFKEHHNKD-----SKYIIKNWIEESQQY R KWRTKLDGG  
PebA\_NOSPU : EFKVSDRGR-----NPAT I RSWCYQS QEL EKERYTYIDAG  
PebB\_SYNPY : LQREDQTGSKSK-SIPVTTATWACKTEKF RQVRAACVSAG  
PebB\_SYN81 : LQKEGSTGSKAK-PVPVTTATWACSTDKL RQVRCACVEAG  
PebB\_PROMA : LSKESTITGSRRN-PVHVTTLTWAAKFEKI RQVRLACTKGG  
PebB\_PROME : SYKESSYGSKKS-KKNINLFTWGATHQKRINFARAVCINS  
PebB\_NOSPU : BSNSAVVGKGN-QEEVVTTSYAEQTAKL RQVRAAHVQGG  
HY2\_ARATH : SSMTGLDG-----KTELQMLAEKSSKI RLLRSMAIEN-  
RCCR\_ARATH : RNFNNPNGSAEASLH I RSGDKSSPIDFVIGSWIHCKIPTG  
RCCR\_HORVU : -----MDFMLQSSLHCKVPNG

9

140 \* 150 \* 180

NMLDILHCVMFFRPEYDLPMEGC DLVGGGR-GQISAAIADLSPVHL---DRTL : 126  
NMLDILHCVMFFRPFQYNEPMEGC DLVGGGR-GQISAAIADLSPITQL---ERTL : 126  
KGLDILHCVMFFPEPLYGEPMEGC DLVAGP-GGVSAATADLSPITQS---DRQL : 129  
RGLDILHCVMFFDPREFDPEEGAD DLVAGP-AGVSAATVDLSPV----SGTL : 123  
KSLKILHCVMFFDPKDYDPEEGMDL VKN-ELVSAATVDLSPSSK---NQNL : 127  
DSLQVENSVAYPDYNYPHPLMGV DLLWFGARQKLVAVLDFQPLVQ---DKDY : 109  
DSLQVENSVAYPDFDLHPLMGV DLLWFGARQKLVAVLDFQPLVQ---DKDY : 109  
DKLQVENSVAYPAYTNDKPLGLI DLLWFGGLKRKLVAVLDFQPLVQ---EERY : 113  
DKLQVENVAYPNFKSEFPDLGAD DLWFGTSQKLLATFDYQPLIQ---EKKY : 109  
ESAQIENSVAYPYSHNYDPELGLI DFLSFG-KVKNLIVLDFQPLFQ---DEDY : 147  
SAASVINFVINPKSTYGLPFEGGDIVTFP--AGHLLALDLQPAIK--TDEVH : 131  
MAASVINFVINPSCREFLPFEGADIVTLP--NGHLLALDLQPVDK--ADPDH : 132  
ESLQVFNLLHPLNDYLPFEGADIVTLP--NGHLLALDLQPAIK--LDNIH : 131  
PNYSVINFLLIPKTSYNLPFLGVDFVSLP--TSHLLVLDLQPSLK--VENQF : 127  
NSLQVNFVFFPHLNYDLPFEGADIVTLP--GGHLLALDLQPEFR--DSAY : 124  
ETHQVDFDFAGFMEPEYDTPFCANFTST--NVNIVLDLNPQLHQLTDQTDY : 159  
VSLNITSISGELNSSTKAPNEVVELIQSS-SKSLVL LLDLPHRKDLVLNPDY : 181  
-AIDITSLFINLNASTQAPHEIMEFIQGS-PTSMVWLLDL LPRKDLALHPEY : 66

4 p P g l 4 D P

Fig. 10 cont'd.



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200 220

PcyA\_ANASP : PESYNSAITSNT---LNFSQP REL P WGN I ---FSDF  
PcyA\_NOSPU : PESYTTAIAQIPV---LNFSQP REL P WGN I ---FSDF  
PcyA\_SYNY3 : PAAYQKSIAELGQ---PEFEQQ REL PPWGEI ---FSEY  
PcyA\_SYNB1 : PSGIETALAGTPS---PAFRQVRDL PGWGTI ---FSBH  
PcyA\_PROME : --KYDHL LSHIDK---SVFKSKREIPIWGN I ---FSKN  
PebA\_SYNPY : LDRYFSG LKEINQRF PDLNGEETMRSFIPNOY ---FSSW  
PebA\_SYNB1 : LDRHFDG LKDNARF PDLNGEETMRSFIPNOY ---FSSW  
PebA\_PROMA : FCRYYKDIQILKNRF VDFNSQKTMKIYDSNKY ---FSPW  
PebA\_PROME : LOKYCS SINDFTKNOY SVF DNHKMKN IYDSKKY ---FSPW  
PebA\_NOSPU : QNKYIAPIKY LHNKY PDLAQNLEMKFYDANQY ---FSKY  
PebB\_SYNPY : TTHVWDR LIPIFERWRDQLPYGGPIPEEAQPF ---FSPG  
PebB\_SYNB1 : TQFVWER LIMP LFERWQAE LFDGGPIPEEAQPF ---FSBA  
PebB\_PROMA : TENVWPR LIP LHDHWQSL LPSGGEI PKAEAPY ---FSPG  
PebB\_PROME : NSELLEQ LILK LKKSCHSSLPVABKMSEIVAKF ---FSPG  
PebB\_NOSPU : QAKYTEP LIP L FHAHQHL SWGGDFPEEAQPF ---FSBA  
HY2\_ARATH : QDKYYNK LMSIY HKYAETF PWGGKL TGESIKF ---FSDL  
RCCR\_ARATH : LKEYYQDTALDSHRQSL LKLPEVNPFYVSPSLFVRSAFSET  
RCCR\_HORVU : IEKYYEDTEVDKQRKIIEQLPQARPYLSPSLFVRSAFSET

4 FS

240 260

CIFVRP-----SSPEEEAMFLGRVREF LQVHCQGAIAA--SPVSAEQK : 199  
CIFVRP-----GSPEEEAMFLSRVREF LDEHMQAIAS--HPVSVEQV : 199  
CIFVRP-----SNVTEERFVQRVDF LQVHCHQSIVA--EPLSEAQT : 202  
VCFVRP-----DGAEEEVLFRSRVEHVLTLRTAVLQTACEPATAAST : 198  
VFEASL-----KNESEKNAFCKIVDNYLSVLIQLSQST--SPDSDEYI : 198  
ILFVRG-----GAEQADLS LPKAFSAFLKAYNDLHDNA--KSI PSTIP : 186  
ILFVRG-----GSEADRSL LPKAFSAFLKAYNGLHDEA--SKEPSSIS : 186  
VILYNG-----SPDDLQCS LAKILDEFIHAENQVDNNN--SREYIKII : 190  
VMICRG-----NKLNLDRD LNNIFCSFVS NVLTINKLH--ONNOFLD : 185  
LFAKT-----DAETVSTRVFEAFODY LNLYNQMLADA--QALHDPED : 224  
FLWTRLPLGE---EGDELIQSIWRPAFNDY LDEYLELAASA--ERVTDERS : 213  
FLWTRLPLGE---EGDELIERVIRPAFIDY LQVYNLVAEA--EFVSDDRA : 214  
FLWTRLPLSK---ESDNIISEI LEPAFGEYLSLYIELLHIA--KPLKKERA : 213  
LWTRLAKHQ---DSDNLIENQLYDSFKEYIN LYLKTLFES--EEVGHGLQ : 209  
FLWTRLP-----QETAVVETQVFAAFKDY LKAYLDFVEQA--EAVTDSQN : 202  
VMNTRF-----SSSKEKHKALFSAFLEYQANLEMTIQV--REEMEP SH : 237  
ASMLKIDAE--EDKLEILRDH VSPA AKEVLEWLERCVKEBEEKIVVGE : 271  
AVFTTIDCGKGEGTLEETVHGH LASVVKGI LQVLDLDTCA SD--ASEMEEG : 155

4

Fig. 10 cont'd.



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280 \* 300 \*

PcyA\_ANASP : QQITLA-GOHNYC SKQOQND KTRRVL EKA FGV DTA FNYMTT  
PcyA\_NOSPU : TQNTLA-GOHNYC TKQQQND KTRRVL EKA FGPVNA ENYMTT  
PcyA\_SYNY3 : LEHRQ-GOIHVC QQQQKND KTRRVL EKA FGEAWA ERVMSQ  
PcyA\_SYNB1 : IRRYE-GOLSYC LQQKRND KTRRVL EKA FDASNA ERVIEE  
PcyA\_PROME : IEERINY QKNYC VQOMKNE KTS LVL EY FDKVVV DEYIEK  
PebA\_SYNPY : PEEVKNL QDKYDI YSAERD PAHGIFT SHFGKETS NRFLHE  
PebA\_SYNB1 : PGDWERL QNAYDV YSAERD PAHGIFT SHFGKETS NRFLHE  
PebA\_PROMA : PSKVEQL HINVDI YSAERD PAHGIFT KSYFGOTWALQ FVRE  
PebA\_PROME : LEQIKNN QIDYQ KYSAEKD EADKLFK TFFGEBTWTENFINN  
PebA\_NOSPU : IQRIVKA QKDYO QYSADR PASGLFSS YFGHEWAERFLHE  
PebB\_SYNPY : EVLLQ-GQKRYT DYRAEK DPARGML TRFHGSEWTEAWIHT  
PebB\_SYNB1 : ELLLS-GQKRYT AYRAEK DPARGML TRFYGSEWTESYIHG  
PebB\_PROMA : LKILE-GQKAYI NYRSTK DPARAML CRFYGKENTEDYIHK  
PebB\_PROME : QELIN-GQNDYL NYRRDN DPAPMLS SLFGKDFTESLINK  
PebB\_NOSPU : LVAILQA QLRYL RYRAEK DPARGMF KRFYGAETTEEYIHG  
HY2\_ARATH : VRANCEA QHKYLT WRAQKDP GHGILL KRLVGEAKAKEILLAD  
RCCR\_ARATH : ERMELER RDKSFRKRSIED DLDLQFP FNFEGEEVSSRVVHA  
RCCR\_HORVU : EREIMVK RDR TVRSKSIEVDLTANL PNFEGEPVSGRIIAE  
q y 1 4 3G 4

320 \* 340 \* 360

VLFDLPE----- : 245  
VLFDLPT----- : 245  
VLFDVIQ----- : 248  
LLEDDPLPPG----- : 247  
VLFDPF----- : 243  
FLFPASSSHK----- : 236  
FLFPASQPA----- : 235  
FLFPHSHLTAD----- : 241  
FLFTLNHNPLK----- : 236  
FLTEDAVPLAVSASKR----- : 280  
VLFDL----- : 257  
VLFDLEDA----- : 262  
VLFDNI----- : 257  
VLFBSTNKVL----- : 257  
FLFDLERKLTVVK----- : 255  
FLFNGVDELGKTFIDYFPEYQTE DGT VSDKRSI IGKSYETR PWDLTGQFIG : 329  
IRKAFGVL----- : 319  
IRKAFGVQEG----- : 205  
LF

Fig. 10 cont'd.



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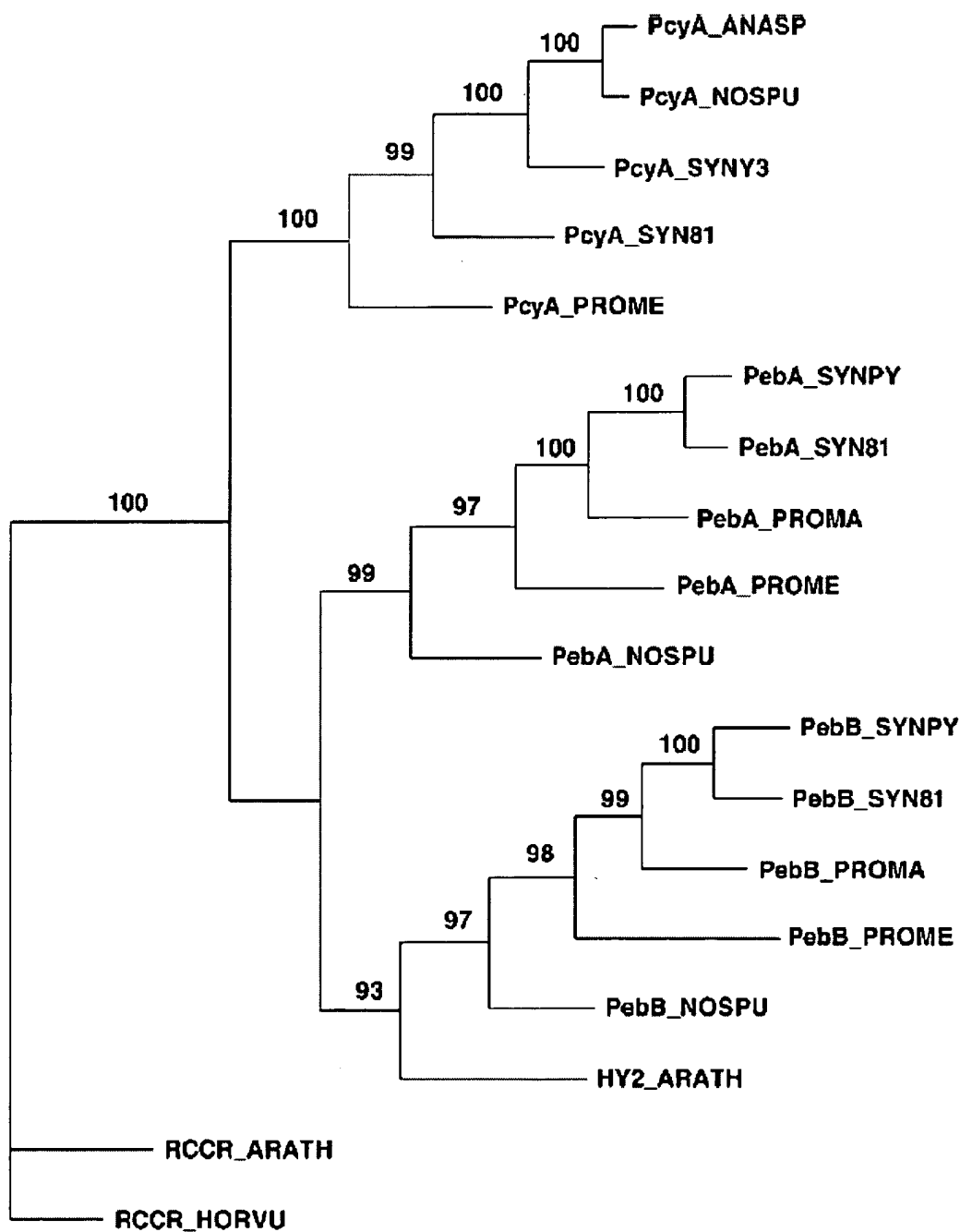
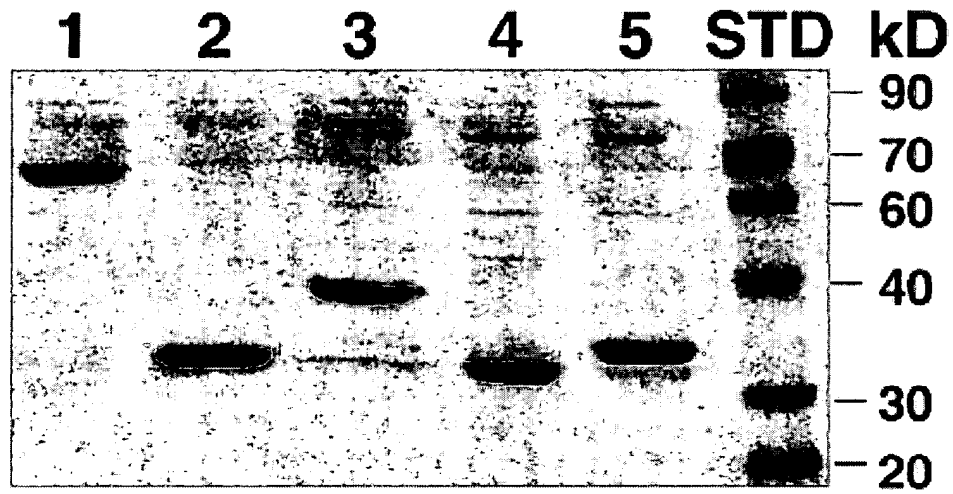


Fig. 11



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**Fig. 12**

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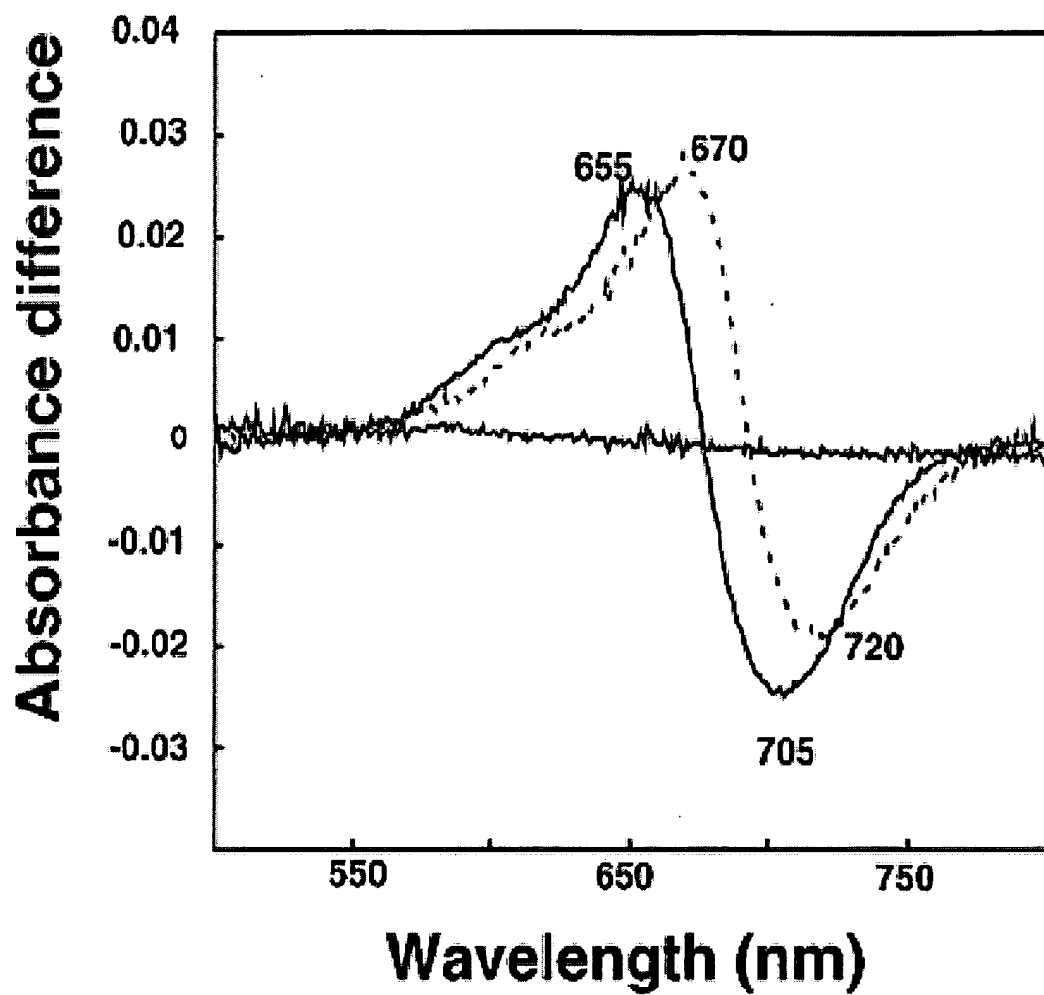
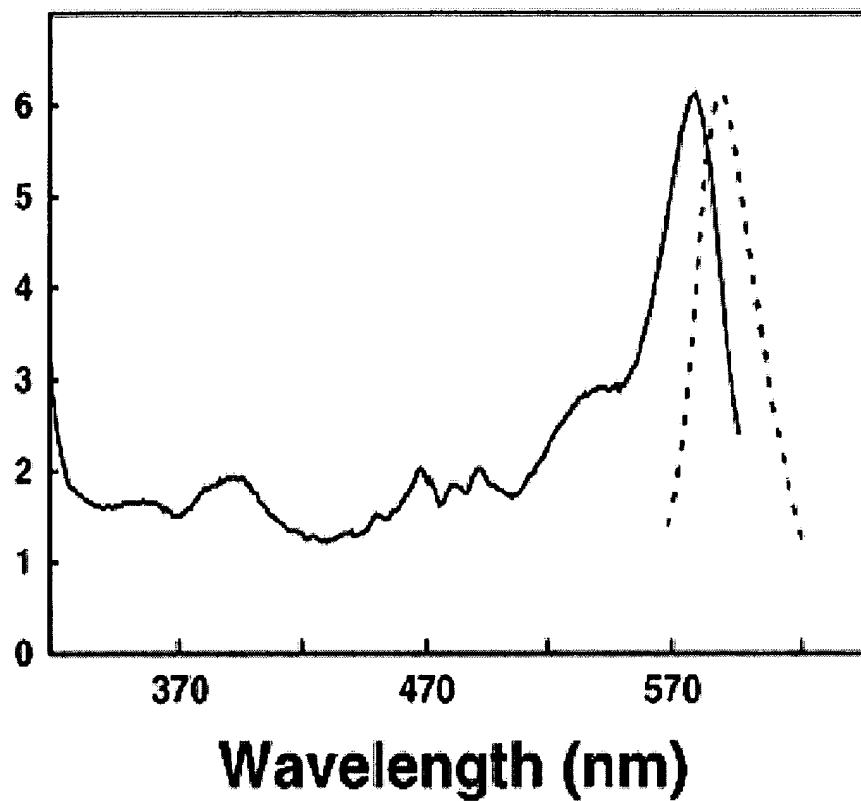


Fig. 13A

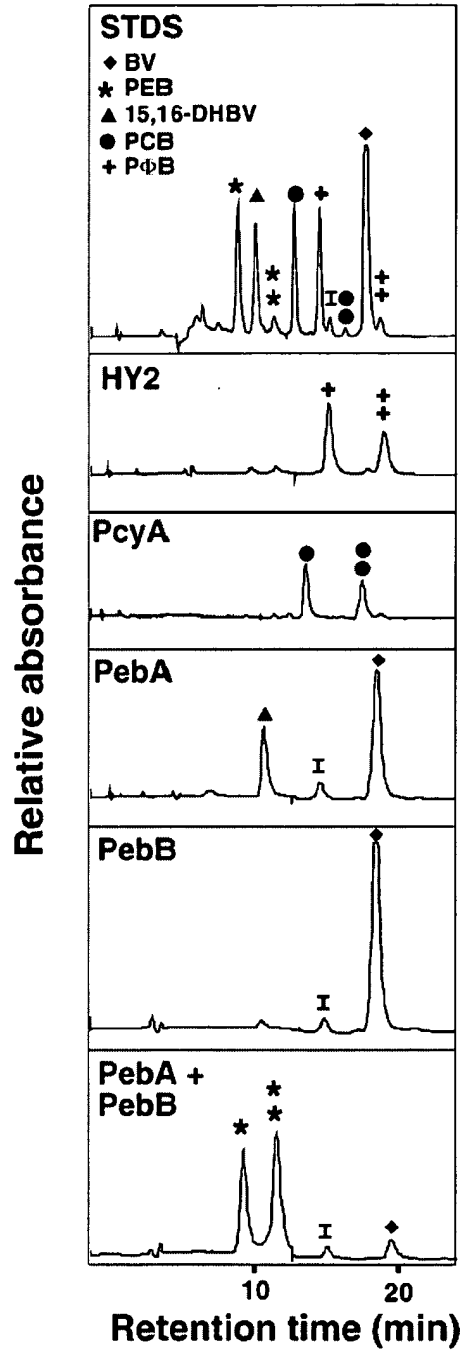
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Normalized fluorescence



*Fig. 13B*

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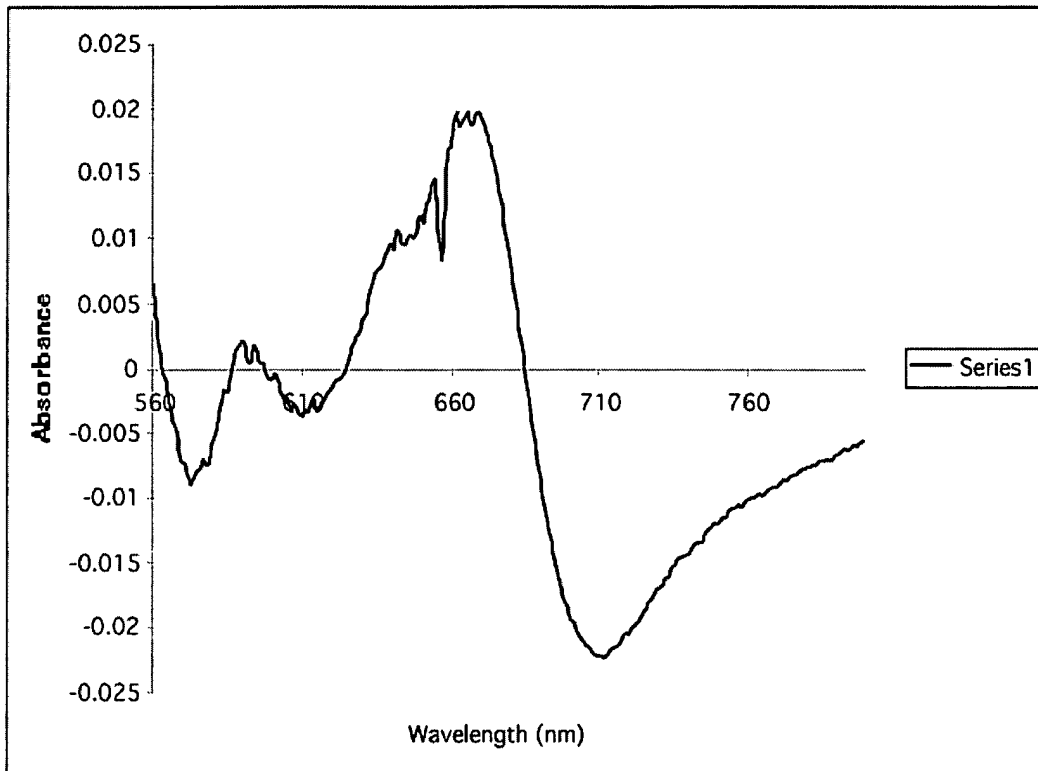


**Fig. 14**



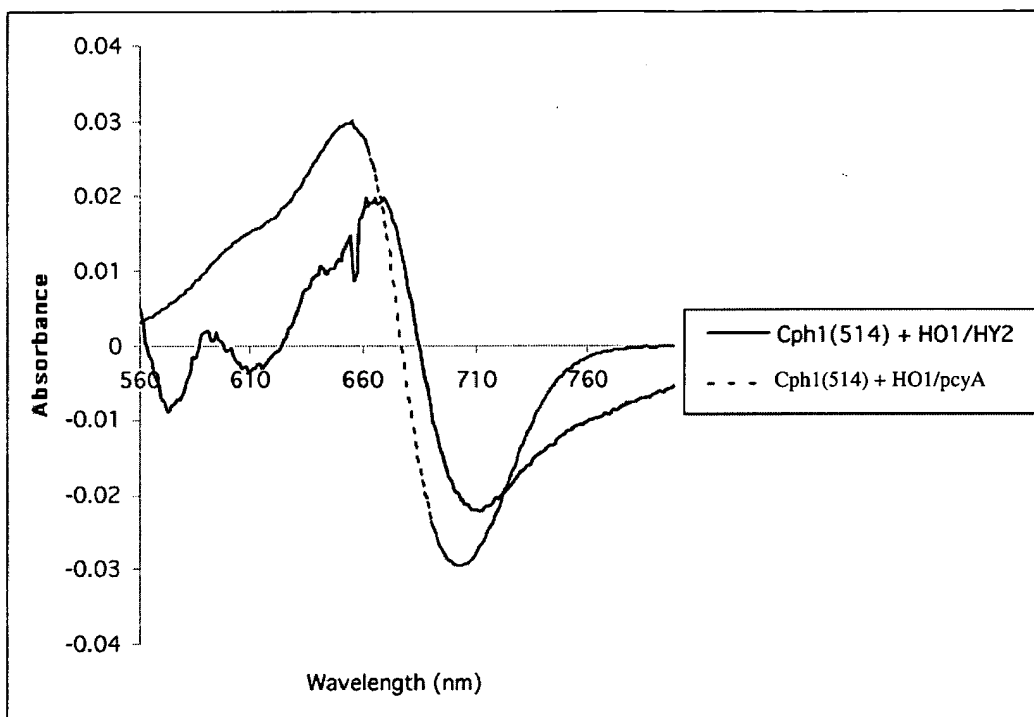
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**Fig. 15**

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**Fig. 16**